EXECUTIVE SUMMARY

PROJECT OBJECTIVES

The purpose of this document is to provide information to the California State Lands Commission (CSLC) and its staff, other local, State and Federal agencies and the public for use in evaluating the environmental consequences of the Broad Beach Restoration Project. It is important to note that the scope of Project review in this Analysis of Impacts to Public Trust Resources and Values (APTR) is focused upon the impacts to public trust resources and values within the jurisdiction of the CSLC. The Broad Beach Geological Hazard Abatement District (GHAD) is seeking approval from the CSLC through the issuance of a lease to restore an area of beach and sand dunes and for an existing, but not previously authorized by the CSLC, emergency rock revetment at Broad Beach in Los Angeles county, California. The GHAD proposes to import dune and beach-quality sand to Broad Beach with the goal of re-establishing a wide sandy beach berm backed by a restored dune system. These efforts are intended to protect existing homes and septic systems threatened by ongoing coastal erosion and to provide for a wide sandy beach to accommodate private and public use. The GHAD also seeks approvals from several agencies for the existing revetment, constructed under emergency permits in 2010, to remain in place.

In order to explain the need for the Project, and to guide development and evaluation of alternatives, the GHAD was asked to define its Project objectives. The GHAD identified the following objectives for the Broad Beach Restoration Project:

- Protect existing homes, structures, and other improvements – including septic systems – from coastal erosion along Broad Beach;
- Create and maintain a wide sandy beach backed by a restored dune system similar to what historically existed along this reach of coastline;
- Provide for enhanced public access along Broad Beach while maintaining homeowner beach access and privacy through establishment of consistent lateral access along the beach;
- Restore and enhance native dune habitats along Broad Beach; and
- Add sandy intertidal habitat to support native fauna (e.g., grunion, shorebirds).

ANALYSIS OF IMPACTS TO PUBLIC TRUST RESOURCES AND VALUES (APTR) PURPOSE AND SCOPE

Generally, the CSLC relies on an environmental review pursuant to the California Environmental Quality Act (CEQA; Pub. Resources Code § 21000 et seq.) to assess a project's impacts to public trust resources and values, as well as other impacts to the

environment to be considered pursuant to CEQA. However, the GHAD's implementation of the Broad Beach Restoration Project is statutorily exempt from CEQA because an "[i]mprovement caused to be undertaken … and all activities in furtherance thereof or in connection therewith, shall be deemed to be specific actions necessary to prevent or mitigate an emergency…." (Pub. Resources Code §§ 26601 & 21080 [4][b]). Although a CEQA document will not be prepared, the CSLC as administrator and guardian over the State's public trust lands has prepared this *APTR* document to analyze and address the Project's impacts to public trust lands, resources and values. Section 1.3 of the APTR provides detailed background of the Public Trust Doctrine and public trust lands and resources.

PROJECT HISTORY

High erosion rates during the 2009-2010 winter season and widespread failure of then-existing temporary emergency sandbag revetments led the Trancas Property Owners Association (TPOA) to apply to the city of Malibu and the CCC for permits to construct a temporary emergency rock revetment. This revetment was accepted as the minimum action necessary, and the least environmentally damaging alternative, to implement the interim shore protection required to protect structures and public health.

In total, approximately 36,000 tons of rock was placed along 4,100 feet of Broad Beach in front of homes located between 30760 and 31346 Broad Beach Road. The rock was placed on top of a filter fabric layer and the revetment varies in width from 27 to 41 feet with an average width of approximately 31 feet at its base. The revetment rises 13 to 17 feet above the average low tide elevation (mean lower low water, or MLLW), with an average height of 15 feet. This revetment was constructed under emergency permits and as such must be removed unless further authorization is obtained.

DESCRIPTION OF PROJECT

Project Action

The CSLC is considering the Broad Beach GHAD's lease application for beach nourishment, dune restoration, and an existing, but not previously authorized by the CSLC, emergency shoreline protective structure (revetment). If the Applicant's request is authorized, CSLC would allow the Broad Beach GHAD to implement a shoreline protection plan along Broad Beach for a period of up to 20 years, consisting of: 1) initial beach nourishment; 2) dune creation and habitat restoration; 3) annual or biannual sand "backpassing" to prolong nourishment[1]; 4) authorizing the existing rock revetment buried under restored dunes; and 5) one additional major renourishment event.

[1] Sand backpassing operations typically involve the use of bulldozers and scrapers to excavate sand from wider downdrift areas for movement updrift to narrow eroded beaches.

Physical Description of Project

The existing beach is a low tide beach and is generally submerged at medium and high tides, and is backed by an existing emergency rock revetment. Expansion of the dry sand beach and creation of a dune system would involve the following:

- Authorizing the existing emergency revetment;
- Dredging of fine-grained sand from offshore of Broad Beach and transport of sand via slurry pipeline onshore for discharge into training dikes and placement within the boundaries of the restored dune area, burying the existing revetment;
- Placing coarse-grained beach-quality sand obtained from an Off-site (offshore) borrow site from the toe of the dune area to the seaward extent of the beach nourishment area;
- Dredging of coarse grained beach-quality sand from offshore of Dockweiler Beach (city of Los Angeles) and/or outside of Ventura Harbor and transport by dredge or scow to Broad Beach;
- Transferring coarse grained beach-quality sand via slurry pipeline onshore for discharge into training dikes;
- Using moveable slurry pipelines to allow for placement of dredged sand along various segments of the beach;
- Using heavy equipment (e.g., scrapers, dozers) to distribute sand to desired locations and depth to create a new dry sandy beach approximately 104- to 286-feet wide within the Project area;
- Developing a restored dune system approximately 55 to 102-feet wide to replicate the historic dune structure and integrity at Broad Beach;
- Removing non-native dune vegetation and replacement with native vegetation consistent with applicable California Coastal Commission (CCC) and city of Malibu standards for dune habitat restoration;
- Using periodic backpassing of heavy construction equipment to move sand from wider eastern reaches of Broad Beach to the narrower reach at the west end of the beach in accordance with objective triggers (see Avoidance and Minimization Measure REC-3b for description of triggers); and
- Importing additional sand in a subsequent renourishment operation beginning approximately 8 to 10 years after Project initiation and in accordance with objective triggers.

After every major beach nourishment and sand backpassing event, the constructed beach would remain subject to ongoing natural wave and littoral transport processes and resulting redistribution of sand. As a result, initially constructed beach profiles would evolve and change until the constructed beach reaches an equilibrium consistent with ongoing coastal processes.

Long-Term Authorization of Existing Revetment

The Broad Beach GHAD seeks approval of the emergency rock revetment constructed in 2010 to act as a last line of defense against coastal erosion. If approved, the revetment would remain in place and would be buried beneath a new system of sand dunes located at the landward edge of the widened, nourished beach. A single additional nourishment event is proposed to maintain beach width and is intended to keep this coastal protection structure buried over approximately 10 to 20 years until beach erosion or other conditions preclude maintaining sufficient beach width for protection. The revetment would serve as a last line of defense against future severe erosion during extreme storm events. The existing revetment varies from 13- to 17-feet-high and 25- to 40-feet-wide at its base, and extends for 4,100 feet along the beach. Portions of the revetment are located on private upland, while other portions are located on public trust lands. Furthermore, portions of the existing revetment are also located on private property that are subject to a publicly-held Access and Recreational Use Easement (AREs) acquired by CCC to facilitate public coastal access. The Project Applicant also proposes to:

- Leave in place segments of the existing revetment that overlie and encroach upon existing AREs on private land;
- Accommodate lateral public beach access on the restored sandy beach area of the Project located on public trust lands; and
- Put in "abeyance" the existing AREs and all currently existing lateral access easements in accordance with Project specifications and the maintenance of same for the life of the Project (for a more detailed discussion refer to Section 2.2.2).[2]

Approval for the long-term authorization of the existing revetment is required from the city of Malibu, CCC, and CSLC.

Sand Sources

Three primary sand sources would potentially be used for the Project: one for fine-grained sand, and two for beach-quality coarser-grained sand.

Sand Sources for Dune Nourishment

The Applicant has identified Central Trancas offshore of Broad Beach as the site best suited for a fine-grained, dune renourishment sand source site. Dune sand would be dredged from an existing deposit of fine-grained sand located in a water depth range

[2] Abeyance is a lapse in succession during which there is no person in whom a title is vested. For Ares, and existing lateral access easements this abeyance would mean that existing AREs and lateral access easements would not belong to a single entity. They would be held equally by all shareholders until legally challenged for removal from abeyance into a single ownership title.

between 45 and 60 feet, approximately 0.25 mile offshore of the eastern segment of Broad Beach and Trancas Creek. This existing sediment deposit stretches for approximately 3.4 miles along the coast from Lechuza Point east to Point Dume and is roughly 1 mile wide.

Sand Sources for Beach Nourishment

Sand used for beach nourishment would be of a larger grain size in order to better resist erosion. The Applicant has identified two locations as suitable and potentially available for use: one site is located outside of the surf zone 0.5 mile off of Dockweiler State Beach approximately 23 miles south of Broad Beach offshore of the city of Los Angeles, and an additional location would be the sand trap area immediately outside Ventura Harbor, 36 miles to the north offshore of the city of Ventura. The Dockweiler offshore site is approximately 115 acres in area at a depth of between 40 and 45 feet. It is a rectangular area with side lengths of 5,000 and 1,000 feet. The Ventura Harbor sand trap is an 11-acre, trapezoidal-shaped area in 25 to 40 feet of water.

Beach and Dune Design

The Project would create a wide sandy beach backed by a system of sand dunes. The height of the proposed sand dunes would be typical of the existing dunes at the east end of the Project area, which are approximately 20 feet higher than Mean Lower Low Water (MLLW). MLLW is the average of all lower low tide elevations averaged over a 19 year period. The top of the existing emergency rock revetment would be buried beneath up to 8 feet of sand and currently exposed foundations, seawalls, and pilings of homes on the west end of the beach would be covered or abutted by sand. Depending on location, the profile of the new dry sand beach berm would be roughly 12 to 17 feet above MLLW or existing winter low tide sand levels. The restored dunes would vary in width, with typical widths ranging from approximately 55 to 102 feet wide. The restored beach would also vary in width, with typical widths ranging from approximately 104 to 286 feet wide. At its widest point, the combined new beach and dune system would extend approximately 286 feet seaward from the top of the existing revetment to the surf zone on the face of the beach berm.

For the purposes of dune and beach design, the Project area is separated into three zones (A, B, and C) based on environmental sensitivity. Zone A measures 400 feet, and includes the majority of the area that supports environmentally sensitive rocky intertidal habitat, rocky outcrops, offshore reef and associated surf grass and kelp habitats at the west end of the beach. Zone B extends approximately 500 feet east of Zone A and includes the transition between the environmentally sensitive rocky habitat areas to less sensitive sandy beach and sandy intertidal areas. Zone C includes the majority of the Project area and extends for approximately 5,000 feet east of Zone B to the east end of the site just upcoast of Trancas Creek, and supports less sensitive sandy beach and intertidal habitats. Zone A was designed to have a higher beach berm and narrower

beach footprint to be protective of sensitive intertidal and nearshore rocky habitat. Zone B was designed similar to Zone A, but with a slightly wider beach footprint due to less constrained conditions. Zone C is relatively unconstrained and is designed with the widest beach berm of the three areas.

Dune Habitat Restoration

The Project includes measures to restore native coastal dune habitats through planting of appropriate native dune vegetation, potentially restoring all such areas to their current Environmentally Sensitive Habitat Area (ESHA) designation, consistent with the city of Malibu's Local Coastal Plan (LCP). Native habitat restoration would include planting species such as beach verbena, dune primrose and other characteristic species found in this community. The Applicant proposes that each property owner would select plant species from an approved list for the dune area fronting their property. A program of initial removal of non-native invasive species such as iceplant, pampas grass, myoporum, and European dune grass from areas within and adjacent to the restored dunes would be initiated by the Broad Beach GHAD.

Posted Signs would demarcate sensitive dune habitats and private property (e.g., "Restricted Dune Habitat Area: Please Remain 25' Seaward of Dunes on Sandy Beach") with the intent of creating a dune habitat restoration area and restricting public access on the restored dunes. Further, protocols implemented by the GHAD for long-term maintenance of restored habitats include initial irrigation plans, ongoing invasive species/weed control and maintenance of signs and access control measures. Paths from the residences, the Malibu West Beach Club, and the county-owned vertical access points to the new beach would be included to guide access and protect newly established and restored dune habitat. The accessways would be bordered by low-profile access control features such as low posts connecting rope/cable barriers to discourage deviation from the paths in order to preserve the ESHA created by the restored dune system. The Applicant's Project proposes to exclude and restrict public access within the restored dune system, while providing private property owners the ability to recreate at the seaward crest of the restored dunes. The Applicant proposes to construct one such vertical access path for each residence along Broad Beach, for a total of up to 114 private walkways crossing the 6,000 feet of restored dune habitat.

For a more detailed discussion regarding implementation, monitoring and competition of dune habitat restoration refer to Section 3.4 and Appendix C.

Future Beach Management Events

Backpassing

The Applicant estimates that backpassing would be performed either annually or biannually, and would occur when physical triggers are reached. Each backpassing operation would require approximately 2 weeks to complete.

Renourishment

Modeling conducted by the Applicant indicates an additional renourishment event would occur approximately 8 to 10 years after the original nourishment event. The renourishment process would be similar to the original nourishment event, though the amount of sand dredged and pumped on to the beach would be less. Physical triggers would indicate the exact time this event would take place. A more detailed discussion of renourishment events and triggers can be found in Section 2.2.9.

KNOWN AREAS OF CONTROVERSY OR UNRESOLVED ISSUES

Controversy

Potential issues of public concern or those that may be controversial include:

- Location of the fluctuating Mean High Tide Line (MHTL); and the location of the Ordinary High Water Mark (OHWM) being the natural MHTL, prior to fill or artificial accretions, and the fixed boundary between public trust lands and private uplands;
- Public lateral and vertical access and potential encroachments and restrictions on such access;
- Potential impacts to rocky intertidal habitats, Trancas Creek and sensitive sand dune species;
- Approval of a lease for the existing, but not previously CSLC-authorized emergency rock revetment;
- Continued use of Onsite Wastewater Treatment Systems for treatment and disposal of septic effluent in the dunes landward of Broad Beach, instead of transitioning to sewage treatment through a wastewater treatment plant; and,
- Importation of sand from offshore sand deposits from other communities and the loss of such sand from those areas and/or littoral cells.

Unresolved Issues

Several issues and project details remain unresolved in the Applicant's Project. For example, the amount of time the original nourishment sand would stay on Broad Beach is one issue that cannot be definitively predicted. Review of historic sand loss rates at

Broad Beach indicate that the initial nourishment event, supplemented by backpassing, would result in retention of a relatively wide beach for 8 to 10 years following the completion of the Project. However, computer modeling of sand loss conducted for the Project indicates that the beach could narrow to present conditions, at least at the west end, within 3 years. How coastal processes would actually affect the nourished beach is unknown and to some degree speculative. This unknown erosion rate makes it difficult to predict exactly how long it would be before the beach exhibits the physical triggers indicating follow-up nourishment is needed. Further, the Project includes a commitment by the Applicant to only one renourishment, and if the beach were to erode at the highest projected rate, the effective lifespan of the restored beach could be only 6 years (i.e., 3 years after initial nourishment plus 3 years after renourishment). In contrast, if historic rates of erosion occur the renourished beach could endure for 10 to 20 or more years.

In addition, a long-term commitment for maintenance of funding for the Project is unidentified at this time. As currently proposed, the Broad Beach GHAD has committed to the initial nourishment event and one major renourishment event along with annual or biannual backpassing of sand, as well as, maintenance of sand dune habitats. However, natural processes would continue to affect the beach, with the beach and dunes predicted to erode within a rough time frame of 10 to 20 years. While the GHAD has indicated that, depending upon circumstances, additional nourishment *may* occur in the future, no firm commitment yet exists beyond the GHAD's initial commitment for one additional nourishment event ten years after the initial beach renourishment.

Large-scale dune restoration as proposed for the Project is a difficult process, which requires substantial inputs of time and fiscal resources. Dune restoration also necessitates ongoing maintenance, weed removal, and remedial planting, possibly extending in excess of 10 years beyond the initial restoration activities. As the Applicant has yet to adopt a comprehensive dune restoration plan with a feasible schedule and reasonably attainable success criteria, it is possible that the proposed restoration activities would be less than sufficient to restore an ESHA. Additionally, the success of the proposed dune restoration may also be adversely impacted by the habitat fragmentation caused by the creation of up to 114 private access walkways, approximately 5 to 8 feet in width, traversing the length of the restored dune habitat. Although foot traffic across these private access walkways is expected to be minimal, current conditions at Broad Beach indicate that foot traffic creates a substantial impact in that clear access pathways are visible from the majority of residences. Consequently, foot traffic on the proposed 114 pathways across the restored dune system would likely result in take (i.e., trampling) of dune plants, and may ultimately substantially reduce the potential benefits of dune restoration, as these pathways would create linear unvegetated bands through the ESHA.

The APTR includes a proposed conceptual dune restoration plan to be used in the development of a comprehensive dune restoration plan, which shall be subject to review and approval by CSLC, the CCC, the California Department of Fish and Game (CDFG), and the city of Malibu. The conceptual restoration plan outlines the goals and objectives of dune restoration and provides the minimum requirements and scope for dune restoration activities. This plan also provides for private beach access with walkways spaced at every 6 houses to facilitate the joint goals of continued beach access as well as the creation of a viable restored dune community.

PROJECT IMPACTS AND ALTERNATIVES

Table ES-1 provides a summary of impacts that would result from the Project. If impacts were considered substantial, Avoidance and Minimization Measures (AMMs) are being recommended to lessen the severity of the impacts. Full details of Project impacts to various resource areas are provided in Section 3.0 of the APTR.

Table ES-2 provides a list of alternatives and a comparison[3] to the Project. These alternatives include actions to move the rock revetment landward, partial or full removal of the revetment, and alternative sand source sites for beach nourishment. Landward relocation of the revetment is consistent with Chapter 4, Section 4.39 of the city of Malibu Local Coastal Program (LCP) that requires all shoreline protection structures to be sited as far landward as feasible. The CCC consideration of the Project is expected to consider alternatives that are consistent with the city of Malibu LCP for landward relocation of the existing revetment.

The Project identifies two offshore sand source sites for the beach nourishment component of the Project (offshore Dockweiler Beach and outside Ventura Harbor), and one offshore sand source site for the dune restoration (offshore Trancas Creek). Two additional sand source sites for beach nourishment were analyzed as alternatives and include offshore of Manhattan Beach and an onshore location at Calleguas Creek in Ventura County approximately 19 miles northwest of Broad Beach. Finally, use of sand from just the site offshore Trancas Creek for both dune restoration and beach nourishment was also analyzed as an alternative.

[3] The comparison between the Project and the various alternatives is analyzed with the emergency revetment in place as it currently exists. Other agencies reviewing the Project may view the alternatives analysis with a reference point prior to placement of the emergency revetment.

Table ES-1. Summary of Impacts for the Project

Impact Class
S = Substantial impact that would remain substantial even with the application of avoidance and minimization measures (AMMs).
UI = Unsubstantial impact with implementation of AMMs.
U = Any impact that is not substantial relative to the public trust impact criteria.
B = Beneficial impact.

Impact	Impact Class	Recommended Avoidance and Minimization Measures (AMMs)
Section 3.1 Coastal Processes		
Impact CP-1: Protection of Public Trust Resources, Septic Systems and Homes from Coastal Processes and Shoreline Erosion Beach nourishment and dune creation would provide substantial short- to mid-term benefits (10 to 20+ years) through protection of public trust resources and private property from coastal erosion.	B	No AMMs recommended.
Impact CP-2: Impacts of Beach Nourishment and Dune Creation of Coastal Processes Nourishment of the beach would have insignificant effects on wave height, wave direction, wave run-up, tides and currents.	U	No AMMs recommended.
Impact CP-3: Change in Sediment Transport to Downcoast Beaches Nourishment of the beach will increase downshore sediment transport to Zuma Beach, Westward Beach, Point Dume and other downcoast beaches.	B	No AMMs recommended.
Impact CP-4: Changes to Coastal Processes in the Broad Beach Restoration Area due to Central Trancas Dredging Activities Dredging the Central Trancas offshore borrow site could alter coastal processes in the primary study area.	U	No AMMs recommended.
Impact CP-5: Changes to Coastal Processes at the Sediment Source Areas due to Dredging Activity Dredging the Dockweiler offshore site and Ventura Harbor sand trap could alter subsurface bathymetry, affecting breaking wave height and direction, and altering regional sand supply.	U	No AMMs recommended.

Table ES-1. Summary of Impacts for the Project (Continued)

Impact	Impact Class	Recommended Avoidance and Minimization Measures
Impact CP-6: Impacts of Sea Level Rise Sea level rise would incrementally contribute to erosion of the proposed new beach over the 10- to 20-year Project life span.	U	No AMMs recommended.
Impact CP-7: Impact of Coastal Processes on Emergency Revetment Over the long term, substandard construction of revetment would provide inadequate protection from coastal processes for septic systems, leachfields and homes.	S	**AMM TBIO-1a. Implementation of a Comprehensive Dune Restoration Plan.** See same AMM response for Impact TBIO-1. **AMM TBIO-8a. Preparation of an Environmentally Sensitive Habitat (ESHA) Protection Plan.** See same AMM response for Impact TBIO-8.
Section 3.2 Marine Water and Sediment Quality		
Impact MWSQ-1: Revetment Retention Impacts to Turbidity of Area Waters Retention of the revetment would continue armoring of the coastline and may increase turbidity in nearshore waters.	UI	**AMM TBIO-1a. Implementation of a Comprehensive Dune Restoration Plan.** See same AMM response for Impact TBIO-1. **AMM REC-5a: Requirement of Additional Nourishment.** See same AMM response to Impact REC-5. **AMM REC-5b: Financial Surety for Revetment Removal.** See same AMM response for Impact REC-5. **AMM REC-5c: Sea Level Rise Effects.** See same AMM response for Impact REC-5.
Impact MWSQ-2: Beach Nourishment and Backpassing Impacts to Trancas Lagoon Beach nourishment and construction activities would occur near the mouth of Trancas Creek potentially affecting tidal exchange and the natural functioning of Trancas Lagoon.	UI	**AMM TBIO-4a. Emergency Action Plan Measures Regarding Protection of Terrestrial Biological Resources.** See same AMM response for Impact TBIO-4. **AMM TBIO-4b. Maintain Equipment and Adhere to Work Plan.** See same AMM response for Impact TBIO-4. **AMM TBIO-5a. Maintain the Hydrology of Trancas Creek Lagoon and the Zuma Wetlands.** See same AMM response for Impact TBIO-5. **AMM MWSQ-2a: Construction limitations.** In the event that the Trancas Lagoon mouth is breached during the initial construction period or at any time during backpassing operations, the Geologic Hazard Abatement District will halt construction during high flow episodes where the body of construction equipment would come in contact with flow into or out of the Lagoon.

Table ES-1. Summary of Impacts for the Project (Continued)

Impact	Impact Class	Recommended Avoidance and Minimization Measures
Impact MWSQ-3: Dredging and Nourishment Impacts to Marine Water and Sediment Quality Dredging and nourishment (including backpassing) would potentially increase the turbidity of Project area waters and result in the resuspension of contaminated sediments.	UI	**AMM MWSQ-3a: Water Quality Monitoring.** Construction contracts shall require ongoing water quality monitoring at both the borrow sites and offshore Broad Beach to assess turbidity levels. **AMM MWSQ-3b: Application of BMPs.** Construction contracts shall specify limits on dredge overfilling, restrict dredging and disposal near sensitive habitats, and restrict or designate anchor placement locations to avoid sensitive habitats or species. **AMM HAZ-4a: Response to Dredged Sand Contamination.** See same AMM response for Impact HAZ-4.
Impact MWSQ-4: Impacts to Water and Sediment Quality from Potential Marine Vessel Fuel Oil Spill Water and sediment quality could be impacted by release of fuel oil from the hopper dredge or barges during Project activities following an allusion, collision, or grounding.	S	**AMM MWSQ-4a: Oil Spill Contingency Plan for Tugboats.** Contracts for barging shall require that tugboat operators maintain an Oil Spill Contingency Plan (OSCP) for the reasonable worst case scenario spill of fuel oil, based on a complete loss of fuel oil from their largest tank. Such a document could be prepared by the Applicant as a master OSCP for all barges. The OSCP would, at a minimum: 1. Provide procedures to mitigate or avoid spills during an allision, collision or grounding 2. Delineate the procedures to be followed in the event of a fuel or oil release to water, including responsibilities for crew, notification, and record- keeping 3. Identify the on-board resources available to barge operators for initial response to a spill 4. Provide the appropriate contact information for oil spill response agencies **AMM HAZ-2a: Develop Hazardous Material Spill Prevention Control and Countermeasure Plan.** See same AMM response for Impact HAZ-2.
Section 3.3 Marine Biological Resources		
Impact MB-1: Sand Placement Impacts to marine Biological Resources Sand placement from Project construction and one renourishment event would result in burial and disturbance of sensitive intertidal and subtidal habitats along Broad Beach.	UI	**AMM MB-1a: Sand Placement Footprint Limitation.** Construction contracts shall specify that all initial sand deposits during nourishment events shall be placed on the upper beach at the western 900 feet of the Project area near Point Lechuza. Sand placement and mechanical distribution will be limited to areas falling within 150 feet of existing

Table ES-1. Summary of Impacts for the Project (Continued)

Impact	Impact Class	Recommended Avoidance and Minimization Measures
		homes. To maximize sand dispersion over time and reduce the depth of burial of lower intertidal rocky habitat, sand in the western 900 feet of Broad Beach shall be placed in two separate intervals so that only half the total amount of sand is placed at one time. The intervals shall be at the beginning of the placement, and then at the last stage of placement to allow the maximum time span between placements. **AMM MB-1b: Rocky Subtidal and Intertidal Habitat.** The Project Applicant shall pay fees to California State Lands Commission (CSLC) to offset the short- to mid-term loss of or damage to rocky subtidal and intertidal and surfgrass habitats associated with the Project. Fees shall be based upon the loss of 2 acres of such habitat and be sufficient to fund creation of 4 acres of shallow subtidal offshore reef and/or rocky intertidal habitat, including surfgrass restoration. Alternatively, such fees may go to subtidal and intertidal rocky habitat protection, restoration and or enhancement projects. Such habitat creation, protection and restoration efforts shall be located within the Point Dume State Marine Conservation Area or Point Dume marine Reserve to the extent feasible. If this is not feasible, projects within Santa Monica Bay may be considered. CSLC should consult with appropriate local, State and Federal agencies over such projects. **AMM MB-1c: Monitoring for Grunion.** If possible, construction activities shall be conducted outside the spawning season for grunion (March through August). If construction cannot be avoided during this period, pre-construction biological surveys for spawning grunion shall be conducted by a certified biologist. If spawning is observed, construction will halt in that area, and the spawning area plus a 250-foot buffer to each side of the spawning area will be protected from Project activities until after the next spring tides (approximately 10 days to 2 weeks).
Impact MB-2: Backpassing Impacts to Marine Resources Annual or biannual backpassing would prolong disturbance of both rocky and sandy intertidal habitats impacting intertidal species diversity and abundance.	UI	**AMM MB-2a: Sand Backpassing Limitation.** Backpassing borrow areas shall be limited to 1,000 feet of beach at the east end and not more than 5 acres. Backpassing shall convey sand to the upper margins of the beach berm and toe of the dune system in the western 900 feet of Broad Beach. Sand transported from backpassing will not

Table ES-1. Summary of Impacts for the Project (Continued)

Impact	Impact Class	Recommended Avoidance and Minimization Measures
		be placed or redistributed further seaward than 100 feet from toe of dunes or 150 feet from existing development. Backpassing vehicle corridors shall be clearly defined and limited to minimize beach disturbance. Backpassing will be limited to one two-week period annually. **AMM MB-2b: Beach Habitat Management Plan.** The applicant shall prepare, submit and implement a Beach Habitat Management Plan (BHMP). The BHMP will set forth measures to minimize the impacts of backpassing and maintain biological productivity of intertidal and high intertidal habitats, including but not limited to prohibition of grooming, creation and maintenance of areas of beach wrack and beach strand habitat on areas of the berm outside of backpassing borrow and deposition zones. **AMM MB-1c: Monitoring for Grunion.** See same AMM response for Impact MB-1
Impact MB-3: Dredging Impacts to Marine Resources Dredging would result in loss of benthos, temporary increases in turbidity, and temporary displacement of demersal fish species at the sand source sites.	U	No AMMs recommended.
Impact MB-4: Construction and Vessel Traffic Impacts to Commercial and Recreational Fishing Increased vessel traffic offshore the Project site and Off-site areas could restrict fishing in the Project area and cause losses or damage to fishing gear in the area.	U	No AMMs recommended.
Impact MB-5: Construction and Vessel Traffic Operations Impacts to Marine Mammals and Turtles Noise from vessel traffic and Project operations can mask reception capabilities and startle or injure marine species while entanglement or collisions with vessels can injure or kill protected species.	UI	**AMM MB-5a: Marine Mammal and Turtle Contingency Plan.** The Applicant shall ensure that a marine mammal and sea turtle avoidance contingency plan is developed and implemented for all vessel operators (including tows, barges, launches) that focuses on recognition and avoidance procedures. The plan shall be submitted prior to any offshore activities for approval and reports shall be submitted to California State Land Commission staff. Minimum components of the plan include: 1. All vessel operators shall be trained by a marine mammal expert to recognize and avoid marine mammals and turtles prior to

Table ES-1. Summary of Impacts for the Project (Continued)

Impact	Impact Class	Recommended Avoidance and Minimization Measures
		Project-related activities. Training sessions shall focus on the identification of marine mammal and turtle species, the specific behaviors of species common to the Project area and transport routes, and awareness of seasonal concentrations of marine mammals and turtles. 2. A minimum of two observers shall be placed on all support vessels during the spring and fall gray whale migration periods (generally December through May), and during periods/seasons when other marine mammals, such as migrating fin, blue, and humpback whales (generally June through November), are known to be in the Project area in relatively large numbers. Observers can include the vessel operator and/or crew members, as well as any Project worker that has received proper training. Vessel operators and crews shall maintain a vigilant watch for marine mammals and sea turtles to avoid striking sighted protected species. 3. Vessel operators will make every effort to maintain a distance of 1,000 feet from sighted whales, and 150 feet or greater from sea turtles or smaller cetaceans whenever possible. 4. When small cetaceans are sighted while a vessel is underway (e.g., bow-riding), vessel operators shall attempt to remain parallel to the animal's course. When paralleling whales, vessels will operate at a constant speed that is not faster than the whales' and shall avoid excessive speed or abrupt changes in direction until the cetacean has left the area. 5. Per National Oceanic and Atmospheric Administration recommendations, and when safety permits (i.e., excluding during poor sea and weather conditions, thereby ensuring safe vessel maneuverability under those special conditions), vessel speeds shall not exceed 11.5 mph (10 knots) when mother/calf pairs, groups, or large assemblages of cetaceans (greater than five individuals) are observed near an underway vessel. A single cetacean at the surface may indicate the presence of submerged animals in the vicinity; therefore, prudent precautionary measures, such as decreasing speed and avoiding sudden

Table ES-1. Summary of Impacts for the Project (Continued)

Impact	Impact Class	Recommended Avoidance and Minimization Measures
		changes in direction, should always be exercised. The vessel should route around the animals, maintaining a minimum distance of 300 feet whenever possible. 6. Whales may surface in unpredictable locations or approach slowly moving vessels. When an animal is sighted in the vessel's path or in close proximity to a moving vessel and when safety permits, operators will reduce speed and shift the engine to neutral. Vessel operators will not engage the engines until the animals are clear of the area. 7. Support vessels (i.e., barge tows) shall not cross directly in front of migrating whales, other threatened or endangered marine mammals, or marine turtles. 8. Vessels shall not separate female whales from their calves. 9. Vessel operators will not herd or drive whales. 10. If a whale engages in evasive or defensive action, support vessels will drop back until the animal moves out of the area. 11. Collisions with marine wildlife will be reported promptly to the Federal and State agencies listed below pursuant to each agency's reporting procedures. National Marine Fisheries Service Southwest Region, Stranding Coordinator Long Beach, CA 90802 (562) 980-3230 or (562) 506-4316 (24 hr cell) California State Lands Commission Mineral Resources Management Division Long Beach, CA 90802 (562) 590-5201
Impact MB-6: Impacts to Marine Resources from Potential Fuel or Oil Release The increased vehicle and marine vessel traffic associated with the Project would result in an increased risk of oil or fuel release as a consequence of onshore spillage, vessel allision, collision or grounding.	UI	**AMM MWSQ-4a: Oil Spill Contingency Plan for Tugboats.** See same AMM response for Impact MWSQ-4

Table ES-1. Summary of Impacts for the Project (Continued)

Impact	Impact Class	Recommended Avoidance and Minimization Measures
Section 3.4 Terrestrial Biological Resources		
Impact TBIO-1: Impacts to Terrestrial Biological Resources Resulting from the Installation of the Rock Revetment Installation of the rock revetment resulted in direct adverse impacts to dune habitat, considered an environmentally sensitive habitat area (ESHA) under the Malibu Local Coastal Program (LCP), as well as to sensitive species such as the globose dune beetle.	S	**AMM TBIO-1a. Implementation of a Comprehensive Dune Restoration Plan.** The Applicant shall prepare and implement a comprehensive dune restoration plan, which shall include the creation of a new coastal dune system approximately 55 to 102 feet in width and 20 feet in height. The dune restoration plan shall include, but not be limited to the following measures, described more fully in the conceptual restoration plan provided in Appendix C of CSLC's *Analysis of Impacts to Public Trust Resources and Values*. • The comprehensive dune restoration plan shall include a landscape plan that details specific planting plans, with native vegetation specific to foredune, dune crest, and back dune habitats. • The plan shall outline specific measures associated with invasive species removal in both private yards as well as in the degraded dune system on public land. It shall also outline specific measures regarding native revegetation, highlighting details regarding appropriate planting densities and planting methods. • The plan shall outline long-term monitoring and maintenance activities, including monitoring and survey methods as well as detailed monitoring and maintenance schedules. • The plan shall address public and private access control and maintenance in the vicinity of the restored dune system.
Impact TBIO-2: Short-Term Construction Impacts to Terrestrial Biological Resources Construction activities associated with beach nourishment and dune creation may adversely impact existing sandy beach and foredune habitats as well as the Trancas Creek lagoon.	UI	**AMM TBIO-2a. California State Lands Commission (CSLC)-approved Biologist and Biological Monitors for Construction Activities.** The Applicant shall retain a CSLC-approved Project biologist and Project monitors to supervise dredging, sand deposition, and all other construction related activities. The biological monitors shall be present to ensure that damage to any sensitive habitat or sensitive species is minimized and that construction crews strictly comply with all mitigation measures. Additionally, the Project biologist shall complete the following: • Prior to the commencement of construction-related activities the Applicant shall conduct protocol-level surveys for native plant

Table ES-1. Summary of Impacts for the Project (Continued)

Impact	Impact Class	Recommended Avoidance and Minimization Measures
		species, with a special focus on sensitive species, in potential environmentally sensitive habitat (ESHA), beyond that which was surveyed by WRA, Inc. (2011). • Prior to the commencement of construction-related activities the Applicant shall conduct protocol-level surveys for western snowy plover, silvery legless lizard, globose dune beetle, and sandy beach tiger beetle. • Where feasible, prior to and during construction, collect and relocate sensitive plant, invertebrate and reptile species that are likely to be impacted by the proposed nourishment and dune creation activities. • Be present during all construction activities that may potentially cross ESHA as defined by in the Malibu Local Coastal Program (LCP), including the degraded dunes as well as Trancas Creek Lagoon. • The Applicant shall have a qualified biologist conduct an additional protocol level survey for western snowy plover and California least tern prior to any construction during the breeding season between March and September. Should breeding individuals be identified, all work within a 300-foot-radius of the nest shall be halted and the Applicant shall immediately contact the United States Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG). Construction activities within the 300-foot-radius shall resume only with the approval and/or implementation of mitigation measures provided by these agencies. • Ensure the implementation of all measures associated with AMM TBIO-1a, including the complete implementation of the comprehensive dune restoration plan, with associated maintenance and monitoring activities. The biological monitors shall record observations and the Project biologist shall submit a weekly report regarding the implementation of and compliance with all construction-related AMMs. Additionally, this report shall include any relevant biological observations, including a list of species encountered within the Project area. These reports shall

Table ES-1. Summary of Impacts for the Project (Continued)

Impact	Impact Class	Recommended Avoidance and Minimization Measures
		eventually be incorporated into a mid-Project Sensitive Biological Resources Report (see AMM TBIO-3c). **AMM TBIO-2b. Sensitive Resources Impact Avoidance.** The Project biologist and the Project engineer shall clearly designate all environmentally sensitive habitat areas (ESHAs), including areas within 100 feet of the Trancas Lagoon as "sensitive resource zones" on the Project maps and construction plans. Construction equipment and operations shall be prohibited in these zones to avoid impacts to special status biological resources. During construction heavy equipment shall be operated in accordance with standard Best Management Practices (BMPs) as well as the following measures: • Vehicles and construction equipment shall be confined to a pre-defined equipment access path no greater than the minimum width necessary to complete the necessary construction activities. • In areas of high vehicle traffic on dry sandy beach, driving mats will be laid down prior to the commencement of construction-related activities in order to avoid unnecessary adverse affects to the sandy beach environment. **AMM TBIO-2c. Protect Stockpiles of Excavated Material.** Materials excavated in order to install the training dikes shall not be stockpiled with 100 feet of the Trancas Creek Lagoon. Additionally, excavated materials shall not be stockpiled within other environmentally sensitive habitat areas (ESHAs) or other sensitive resource zones, including federally designated western snowy plover habitat. **AMM TBIO-2d. Dredge Pipeline Staging Area Location.** The pipeline staging area shall not be located in an environmentally sensitive habitat area (ESHA) or otherwise adversely affect a sensitive biological resource. **AMM TBIO-2e. Prohibited Long-term Storage within the Temporary Dredge Pipeline Staging Area.** Long-term storage (i.e., in excess of 3 days) of materials in the construction staging area shall be prohibited. Materials staged in this area will be strictly limited to dredge pipeline segments and other miscellaneous light equipment. Staging or overnight storage of vehicles or heavy construction

Table ES-1. Summary of Impacts for the Project (Continued)

Impact	Impact Class	Recommended Avoidance and Minimization Measures
		equipment shall be strictly prohibited.
Impact TBIO-3: Long-term Construction (i.e. Backpassing) impacts to Terrestrial Biological Resources Future beach maintenance activities such as backpassing may impact existing and/or created Environmentally Sensitive Habitat Areas (ESHAs) including sandy beach and foredune habitats as well as Trancas Creek Lagoon.	UI	**AMM TBIO-3a. California State Lands Commission (CSLC)-approved Biologist and Biological Monitors for Backpassing Activities.** The Applicant shall retain a Project monitor to supervise backpassing and all other construction related activities. The Project monitor shall ensure that damage to any sensitive habitat or sensitive species within or adjacent to construction zones is minimized. The Project monitor shall conduct the following activities: • Conduct preconstruction trainings with the construction crew leaders so they can readily identify sensitive plant and wildlife species. • Conduct preconstruction surveys of the sandy beach and dune habits as well as in the vicinity of Trancas Creek Lagoon. • Flag the toe of the dune on the seaward side of all foredune vegetation. • Conduct a preconstruction meeting with all construction crew leaders and construction crew members to discuss the implementation of appropriate mitigation measures. **AMM TBIO-3b. Avoidance of Sensitive Resource Zones and Vegetation.** Following the completion of pre-construction biological surveys, the Project biologist shall clearly designate "sensitive resource zones" on the Project maps and construction plans. These zones would include any environmentally sensitive habitat areas (ESHAs) or otherwise sensitive biological resources. Sensitive resource zones are defined as areas where construction would be limited, depending on the particular environmental conditions and construction requirements. No native vegetation shall be impacted or removed during backpassing-related activities. Wetland areas shall be prohibited from use for disposal or temporary placement of excess sand. All equipment used in or near Trancas Creek Lagoon shall be clean and free of leaks and/or grease. Emergency provisions shall be in place prior to the onset of construction and at all times during construction to deal with accidental spills.

Table ES-1. Summary of Impacts for the Project (Continued)

Impact	Impact Class	Recommended Avoidance and Minimization Measures
		AMM TBIO-3c. Sensitive Biological Resources Report. Following the third complete year of Project implementation, the Applicant shall prepare a Sensitive Biological Resources Report. The report shall include the results of past protocol level surveys as well as biological surveys conducted prior to each backpassing event. The report shall assess the presence of sensitive species and habitat as well as analyze the trends in occurrence of sensitive species or habitat. The document shall also include any biologically relevant information gathered during construction monitoring activities. This report shall be submitted to CSLC and shall be used to direct the timing of future backpassing and nourishment events in order to minimize to the impacts to biological resources to the maximum extent feasible.
Impact TBIO-4: Hazardous Spill Impacts to Beach, Coastal Dunes, and Coastal Wetland Biological Resources An accidental hazardous spill subsequent cleanup efforts would potentially result in take of special status species, the loss or degradation of functional habitat values, or cause a substantial loss of a population or habitat of native fish, wildlife, or vegetation.	UI	**AMM TBIO-4a. Emergency Action Plan Measures Regarding Protection of Terrestrial Biological Resources.** Before initiating offshore dredging or sand deposition activities the Applicant shall submit an Emergency Action Plan (EAP) to address protection of sensitive biological resources that would potentially be disturbed during a hazardous spill or subsequent cleanup activities. The EAP shall, at a minimum, include: • Industry standard best management practices to avoid potential spills. • Specific measures to avoid impacts on State-listed endangered and threatened species, California Department of Fish and Game (CDFG) species of special concern, and ESHAs during response as well as cleanup operations. • Identification, where feasible, of low-impact, site-specific, and species-specific remediation techniques. • Identification of standards of a spill response personnel training program. • An outline of a restoration plan including, preemptive identification of access and staging points as well as procedures for timely reestablishment of functional habitat values. • A contact list of emergency response agencies to be retained at all job sites during construction activities.

Table ES-1. Summary of Impacts for the Project (Continued)

Impact	Impact Class	Recommended Avoidance and Minimization Measures
		AMM TBIO-4b. Maintain Equipment and Adhere to Work Plan. All equipment used on site or in dredging activities shall be properly inspected and maintained such that no leaks of oil, fuel, or residues will take place. Provisions shall be in place to remediate any accidental spills, in both the terrestrial and marine environments. All equipment shall only be stored in the appropriate equipment staging areas. The Applicant shall submit a work plan to the California State Lands Commission (CSLC), the California Coastal Commission (CCC), and the city of Malibu for review and approval prior to any dredging or sand deposition activities. The work plan shall include a list of all heavy equipment and shall require all equipment to be stored and fueled in the 0.25-acre area within the Zuma Beach parking lot, which shall be conspicuously demarcated. Heavy equipment and construction activities shall be restricted to the defined construction areas, as demarcated by the Project engineer. Additionally vehicles and personnel shall only use existing access roads to the maximum degree feasible.
Impact TBIO-5: Longshore Sand Transport Impacts to Terrestrial Biological Resources Placement of sand on Broad Beach would increase longshore sand transport and likely result in the widening of Zuma Beach down coast potentially adversely altering the hydrology of the Trancas Creek Lagoon and the Zuma Wetlands Environmentally Sensitive Habitat Areas (ESHAs), but potentially also increasing available sandy beach and dune habitats.	UI	**AMM TBIO-5a. Maintain the Hydrology of Trancas Creek Lagoon and the Zuma Wetlands.** Although the Trancas Creek Lagoon and the Zuma Wetlands may not be within the jurisdiction of the California State Lands Commission (CSLC) they provide habitat for wildlife and plant species held under public trust by the California Department of Fish and Game (CDFG). Consequently these habitats are considered public trust resources. Prior to commencing sand deposition activities in the Project area, the Applicant shall prepare a Trancas Creek Lagoon and Zuma Wetlands Beach Berm Management Plan. This Plan shall be submitted to CDFG for review. The proposed Beach Berm Management Plan shall identify anticipated rate of sand deposition in front of the mouths of these water bodies and include potential measures to maintain the connection between these wetlands and the marine environment as determined appropriate by CDFG.
Impact TBIO-6: Impacts to Terrestrial Biological Resources	B	No AMMs recommended.

Table ES-1. Summary of Impacts for the Project (Continued)

Impact	Impact Class	Recommended Avoidance and Minimization Measures
Resulting From Dune Restoration and Private Access The proposed dune restoration would result in potential short- to mid-term beneficial impacts through enhancement of dune habitat values, as well as potentially increase in populations of special status wildlife or plant species.		
Impact TBIO-7: Impacts to Terrestrial Biological Resources Resulting from Increased Public Access The proposed beach nourishment would result in increased public access to Broad Beach, which may ultimately decrease the functional value of the restored dune system or result in an increase in incidental take, including harassment, of sensitive species.	UI	**AMM TBIO-7a. Restrict Access Across the Newly Restored Dune System.** Access to and across the restored dune system shall be restricted to approved vertical access ways designated with a low-key rope and bollard fence as a means of conserving environmentally sensitive habitat area (ESHA) and limiting the adverse impacts associated with increased public access to the restored dune system. Such rope and bollard fence shall be placed at the toe of the dune and along all approved vertical access ways in order to restrict all access to the dunes and accomplish the goal of reducing impacts to the newly created ESHA. **AMM TBIO-7b. Include Educational Signage Regarding Sensitive Wildlife and Plant Species.** In addition to the low profile features meant to curb impacts to restored dune, educational signs shall be included along the length of the rope and bollard fence. These signs will help to educate the public and residents regarding sensitive dune species, reduce incidental take (including harassment) of sensitive species, and improve the appreciation and enjoyment of public trust resources.
Impact TBIO-8: Long-term Degradation and Erosion of Newly Created Environmentally Sensitive Habitat Area (ESHA) Following the cessation of the Project in 10 to 20 years, newly restored dune habitat would gradually erode, eventually exposing the revetment and likely leading to a return to emergency measures for protection of property not protected by the revetment or impacted by the degradation of the revetment.	UI	**AMM TBIO-8a. Preparation of an Environmentally Sensitive Habitat Area (ESHA) Protection Plan.** Prior to commencement of any Project-related activities the Applicant shall submit a comprehensive dune restoration plan which would include a long-term ESHA protection plan as well as a public access protection plan, for approval to the California State Lands Commission (CSLC), the California Coastal Commission, the California Department of Fish and Game, and the city of Malibu. The plan would detail the various responsibilities of the Applicant as well as the relevant agencies in protecting newly created ESHA and lateral public access at Broad Beach. The plan would include adaptive management techniques and outline potential means to extend the life of the Project.

Table ES-1. Summary of Impacts for the Project (Continued)

Impact	Impact Class	Recommended Avoidance and Minimization Measures
Section 3.5 Land Use, Recreation and Public Access		
Impact REC-1: Construction and Renourishment Effects to Recreation Short-term construction would interfere with recreational use and access on public lands.	UI	**AMM REC-1a: Public Access during Construction and Renourishment.** At least two weeks prior to commencing construction and renourishment operations, the construction contractor shall post signs notifying the public of the scheduled dates of nourishment operations at the public access points and at other highly visible locations along the beach. Construction contractors shall be responsible for maintaining lateral beach access to the maximum extent feasible to permit continued, safe public passage (e.g., burying of dredge pipeline, use of a flagman, and construction vehicle management). **AMM REC-1b: Public Access and Safety to Offshore Areas during Construction and Renourishment.** The Vessel Safety Plan shall detail avoidance and other measures for reducing potential safety and recreation effects to offshore recreational users.
Impact REC-2: Backpassing Impacts to Recreational Users Backpassing would interfere with recreational use and access on public lands.	UI	**AMM REC-2a: Public Access during Backpassing.** At least two weeks prior to commencing backpassing operations, the construction contractor shall post signs notifying the public of the scheduled dates of backpassing at the public access points and at other highly visible locations along the beach. The construction contractors shall be responsible for maintaining lateral beach access to the maximum extent feasible to permit safe public passage (e.g., designated public access points, flagman, and construction vehicle management).
Impact REC-3: Medium- and Short-Term Effect to Recreational Use Project construction and maintenance of a widened beach and restored dune system would increase and enhance public recreation opportunities and later access.	B	**AMM REC-3a: Beach Profile Reporting.** The Applicant shall submit quarterly monitoring reports prepared by an approved third-party monitor to the California State Lands Commission (CSLC). Monitoring reports shall provide beach profile information obtained during that period, consistent with monitoring procedures outlined in Section 2.2.8, *Project Description,* of CSLC's *Analysis of Public Trust Resources and Values*. Monitoring reports shall identify action items for subsequent periods, including but not limited to the initiation of backpassing or renourishment based on beach profile proximity to triggers. **AMM REC-3b: Renourishment Triggers.** The trigger to begin a

Table ES-1. Summary of Impacts for the Project (Continued)

Impact	Impact Class	Recommended Avoidance and Minimization Measures
		major renourishment event shall be the point in time when insufficient sand is available for backpassing in the fall season, as indicated when: • The west end of the nourished beach is in deficit (i.e., the point in time when the western average is 50 feet or less for 12 consecutive months) and the eastern average is less than 25 feet wider over the same period of time. • The east end of the nourished beach is in deficit (i.e., the point in time when the eastern average is 50 feet or less for 12 consecutive months) and the western average is less than 25 feet wider over the same period of time. A renourishment event shall be implemented based on triggers listed above, regardless of the amount of time passed since the initial nourishment.
Impact REC-4: Privacy Buffer Effects to Public Trust Lands, Public Access and Recreational Use The privacy buffer would place a substantial percentage of dry sand beach berm overlying public trust lands off limits to the public and potentially lead to renewed access conflicts at Broad Beach.	UI	**AMM REC-4a: Elimination of Privacy Buffer.** A privacy buffer on public trust lands shall not be permitted.
Impact REC-5: Long-Term Effects to Recreational Use Exposure of the revetment through coastal erosion after cessation of beach nourishment would adversely affect recreational beach use and access by blocking public access to public trust lands and easements.	UI	**AMM REC-5a: Requirement of Additional Nourishment.** The Applicant shall commit to additional nourishment events as necessary within the 20-year Project lifetime to maintain the public benefits of the widened beach and protection of the restored dune system. The timing and quantity for any additional nourishment would be based on the objective triggers identified for the Project. **AMM REC-5b: Financial Surety for Revetment Removal.** In accordance with standard California State Lands Commission (CSLC) lease procedures, prior to lease approval, the Applicant shall post a bond or other financial surety for the removal of the revetment. The financial surety shall be valid for a minimum period of 20 years, and shall be unencumbered for use by CSLC should removal of the revetment be required and/or earlier expiration of the lease. **AMM REC-5c: Sea Level Rise Effects.** The effects of sea level rise

Table ES-1. Summary of Impacts for the Project (Continued)

Impact	Impact Class	Recommended Avoidance and Minimization Measures
		on Broad Beach shall be analyzed towards the end of the Project life (20 years) and reported to the California State Lands Commission (CSLC). This would include, but not be limited to, analysis of potential changes in property boundaries from the resultant changes in the elevation of the mean high tide line and the effects of increased erosion rates on the need for beach nourishment. Where changes in property boundaries occur that result in additional public trust lands being impeded from public use in the Project area, the CSLC shall determine appropriate Project measures to ensure no net loss of public trust lands available for public use in the Project area.
Impact REC-6: Conflicts with Malibu Local Coastal Program (LCP), California Coastal Act, and Public Resources Code Policies Project impacts to ESHAs and on public access to and use of public lands would potentially conflict with the California Coastal Act and Malibu LCP policies.	S	**AMM TBIO-1a. Implementation of a Comprehensive Dune Restoration Plan.** See same response for Impact TBIO-1
Impact REC-7: Sand Supply Effects on Regional Sand Resources Project would potentially reduce sand supply to other beaches and/or for future nourishment project, indirectly affecting recreational opportunities on downshore Ventura and Los Angeles county beaches.	U	No AMMs recommended.
Section 3.6 Geological Hazards and Mineral Resources		
Impact GEO-1: Structural Stability of the Revetment The revetment is subject to remobilization of boulders along with settling from liquefaction events, reducing long-term protection of onsite wastewater treatment systems (OWTS) and integrity against wave action.	S	**AMM TBIO-8a: Implementation of a Comprehensive Dune Restoration Plan.** See same response for Impact TBIO-8
Impact GEO-2: Extracted Sand Lost as a Resource to Other Beaches Extracted sand would no longer be available for extraction and nourishment projects at other beaches.	UI	**AMM GEO-2a: Funding for Regional Sand Management.** The Applicant shall contribute funding to the State which will fund efforts by the Regional Sand Management agency to identify and mitigate the causes of beach erosion in the Santa Barbara littoral cell and the Santa Monica littoral cell. The specific level of funding will be determined through an agreement with the Regional Sand

Table ES-1. Summary of Impacts for the Project (Continued)

Impact	Impact Class	Recommended Avoidance and Minimization Measures
		Management agency, jurisdictions with approval authority over the sand source (e.g., California State Lands Commission, Beach Erosion Authority for Clean Oceans and Nourishment, city of Los Angeles).
Section 3.7 Air Quality		
Impact AQ-1: Construction Impact on Air Quality Construction activities would generate emissions that exceed South Coast Air Quality Management District (SCAQMD) thresholds for CO, NO_x, PM_{10} and $PM_{2.5}$.	S	**AMM AQ-1a: Fugitive Dust Control.** The Applicant shall submit and implement a Fugitive Dust Control Plan that includes SCAQMD mitigations for fugitive dust mitigation, according to Rule 403. The Plan shall also address fugitive dust measure impacts to native habitats. Fugitive dust mitigation measures in the plan should include the following: • Require minimum soil moisture of 12% for earthmoving, by using a moveable sprinkler system or water truck. Moisture content can be verified by lab sample or moisture probe (69% reduction). • Limit On-site vehicle speeds roads to 15 mph with radar enforcement (57% reduction) and posting of speed limits. • All trucks hauling sand or other loose materials are to be tarped with a fabric cover and maintain a freeboard height of 12 inches (91% reduction). • Water storage piles by hand or apply cover when wind events are declared, according to SCAQMD Rule 403 when instantaneous wind speeds exceed 25 miles per hour (90% reduction). • Appoint a construction relations officer to act as a community liaison concerning onsite construction issues, such as dust generation. **AMM AQ-1b: NO_x/PM Control.** The Applicant shall implement a NO_x reduction program including the following, or equivalent, measures: • All off-road construction equipment shall be tuned and maintained according to manufacturers' specifications. • Any temporary electric power shall be obtained from the electrical grid, rather than portable diesel or gasoline generators. • All off-road diesel construction equipment with greater than 100-horsepower engines shall meet Tier 4 requirements. If the lead

Table ES-1. Summary of Impacts for the Project (Continued)

Impact	Impact Class	Recommended Avoidance and Minimization Measures
		agency determines that a Tier 4 fleet or portion thereof cannot be obtained, the lead agency shall require the use of construction equipment that meets Tier 3 emissions requirements or utilize other CARB-verified emission control technologies to achieve the same level of emission reduction. • Limit onsite truck idling to less than 5 minutes. • A copy of the certified tier specification, best available control technology documentation, or the CARB or SCAQMD operating permit for each piece of equipment shall be provided when each piece of equipment is mobilized.
Impact AQ-2: Construction impact of Greenhouse Gas Emissions Potential beach enhancement activities would increase greenhouse gas emissions.	U	No AMMs recommended.
Impact AQ-3: Construction Toxic Pollutant Emissions and Potential Health Risk Construction activities would generate emissions of toxic air contaminants that would potentially impact human health.	UI	**AMM AQ-3a: Diesel Particulate Emission Controls.** The Applicant shall install CARB-verified Level 3 diesel catalysts on all diesel-powered off-road equipment and marine vessels or utilize diesel engines that have an equivalent PM emission rate (Tier 4 engines). The current list of CARB-verified Level 3 diesel catalysts is available from http://www.arb.ca.gov/diesel/verdev/vt/cvt.htm. Catalysts or engine certifications shall demonstrate achieving 85% reduction for diesel particulate matter.
Section 3.8 Aesthetics		
Impact AES-1: Visual Effects from the Presence of the Emergency Revetment The emergency revetment impacts the visual quality of Broad Beach.	UI	**AMM TBIO-1a. Implementation of a Comprehensive Dune Restoration Plan.** See same AMM response for Impact TBIO-1. **AMM REC-5a: Requirement of Additional Nourishment.** See same AMM response to Impact REC-5. **AMM REC-5b: Financial Surety for Revetment Removal.** See same AMM response for Impact REC-5.
Impact AES-2: Short-Term Visual Effects from Beach Restoration Construction Activities at Broad Beach Construction activities would create temporary negative visual impacts during dune restoration, nourishment events, and	UI	**AMM AES-2a: Shielded Lights during Night Operations.** During night operations, lights placed on the beach shall be shielded and directed at the dredge pipeline discharge point. **AMM AES-2b: Nightly Equipment Removal.** Equipment placed on

Table ES-1. Summary of Impacts for the Project (Continued)

Impact	Impact Class	Recommended Avoidance and Minimization Measures
backpassing events.		the beach shall be returned to the staging area at the end of each workday, both for public safety and for aesthetic considerations.
Impact AES-3: Visual Effects from the Nourishment of Broad Beach Nourishment of Broad Beach would improve the visual quality of Broad Beach over the short- to mid-term.	B	No AMMs recommended.
Impact AES-4: Visual Effects from Dredging Activities Offshore Dockweiler and Outside Ventura Harbor Dredging activities could create temporary negative visual impacts associated with large marine vessels operating in nearshore waters.	U	No AMMs recommended.
Impact AES-5: Potential Indirect Visual Impacts to Los Angeles and Ventura Beaches due to Decreased Sand Supply Removal of sand from the Santa Monica Bay and Ventura Littoral Cells could deprive downcoast beaches of sand for renourishment projects.	U	No AMMs recommended.
Section 3.9 Noise		
Impact N-1: Construction Impact to Recreational users of Broad Beach Short-term noise levels would increase during Project construction potentially affecting a public beach.	UI	**AMM N-1a: Use of Mufflers.** To the maximum extent feasible, equipment and trucks used for Project construction shall utilize the best available noise control technique (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds, wherever feasible). **AMM N-1b: Limit Hours of Construction.** Pursuant to the Noise Control ordinance of the city of Malibu, section 8.24.050G, construction activities shall be prohibited during the hours between 7:00 PM and 7:00 AM during the weekdays and any time on Sundays or holidays. All construction related to the Project would take place between the hours defined by the Ordinance, with the exception of pumping dredged sand into the dune and onto the beach which would occur 24 hours per day and 7 days a week during the 30 day pumping phase.
Impact N-2: Construction Impacts to Offshore Recreational users in the Vicinity of the Borrow Sites and Sand	U	No AMMs Recommended.

Table ES-1. Summary of Impacts for the Project (Continued)

Impact	Impact Class	Recommended Avoidance and Minimization Measures
Transportation Routes Short-term noise levels would increase during Project construction potentially affecting recreational users in public trust waters.		
Impact N-3: Construction Impacts to Onshore Recreational Users at Ventura Harbor and Dockweiler State Beach Short-term noise levels would increase during dredging activities potentially affecting beach users on Dockweiler State Beach and/or Ventura Harbor.	U	No AMMs Recommended.
Section 3.10 Cultural and Paleontological Resources		
Impact CR-1: Disturbance of a Cultural or paleontological Resource due to Construction of the Emergency Revetment Construction of the emergency revetment may have disturbed cultural or paleontological resources or their surroundings on Broad Beach.	U	No AMMs Recommended.
Impact CR-2: Disturbance of a Cultural or Paleontological Resource or its Surroundings due to Dredging and/or Beach Nourishment Dredging and/or beach nourishment activities may disturb cultural or paleontological resources or their surroundings in the Broad Beach Restoration and/or Borrow Sites Project areas.	UI	**AMM CR-2a: Cultural Resource Monitoring Program.** A monitoring program shall be implemented to identify cultural resources encountered during dredging operations at the Central Trancas and the Dockweiler borrow sites. Monitoring procedures shall be specified in a monitoring plan that is approved before dredging is initiated. The monitoring program shall involve periodic spot checks by a qualified archeologist throughout all dredging operations. If the dredging operations enter the 9- to 12-foot range at the Central Trancas borrow site, where the potential for presence of prehistoric resources increases from "low" to "moderate", the frequency of spot checks shall increase at this location. A qualified archaeologist shall be retained on-call for the duration of dredging operations to assess any potential cultural material encountered by dredge operators. If monitoring reveals cultural materials, indicating that dredging had entered into an archaeological deposit, then the dredging operation shall be permanently relocated away from that site and a 250-foot-wide buffer shall be established around the site. **AMM CR-2b. Cultural Resource Investigation of Dockweiler South.** The northern portion of the Dockweiler South site shall not be

Table ES-1. Summary of Impacts for the Project (Continued)

Impact	Impact Class	Recommended Avoidance and Minimization Measures
		used for dredge material without further evaluation of the potential for archeological sites in the area. In the event that this area is evaluated and selected as additional sand source to compliment Dockweiler, measures will go into effect to protect the field of debris that was identified in the side scan sonar data for the Dockweiler site. This target site would be either (1) avoided during dredge operations and protected with a 250-foot buffer area around the debris, or (2) analyzed for potential presence of cultural material, and in the event there is potential for the presence of cultural material it would be avoided during dredge operations and protected with a 250-foot buffer area around the debris. This site would also be included in the monitoring program outlined in AMM CR-2a.
Section 3.11 Public Health and Safety, Hazards		
Impact HAZ-1: Authorization of the Revetment Creates Hazards Authorization of the emergency revetment could impact public health and safety by trapping beach users between large rocks and incoming surf and tides.	UI	**AMM TBIO-1a. Implementation of a Comprehensive Dune Restoration Plan.** See same AMM response for Impact TBIO-1a. **AMM REC-5a: Requirement of Additional Nourishment.** See same AMM response to Impact REC-5. **AMM REC-5b: Financial Surety for Revetment Removal.** See same AMM response for Impact REC-5.
Impact HAZ-2: Hazardous Materials Release During Construction Hazardous material released from construction equipment on the beach during two nourishment events and backpassing could impact public safety.	U	**AMM HAZ-2a: Develop Hazardous Material Spill Prevention Control and Countermeasure Plan.** A Hazardous Material Spill Prevention Control and Countermeasure Plan (SPCCP) shall be prepared prior to implementing the Project to minimize the potential for, and effects from, spills of hazardous, toxic, or petroleum substances during construction of the Project. The SPCCP shall describe storage procedures and construction site housekeeping practices and identify the parties responsible for monitoring and spill response. Routine inspections and monitoring of Best Management Practices (BMPs) shall ensure minimal impacts to the environment occur. Common BMPs include use of containment devices for hazardous materials, training of construction staff regarding safety practices to reduce the chance for spills or accidents, and use of nontoxic substances where feasible. The SPCCP shall also describe actions required if a reportable spill occurs, such as which authorities

Table ES-1. Summary of Impacts for the Project (Continued)

Impact	Impact Class	Recommended Avoidance and Minimization Measures
		to notify and the proper clean-up procedures. It shall also explicitly State procedures for containing, diverting, isolating, and cleaning up the spill such that substantial adverse impacts on surface and groundwater quality would be minimized or avoided.
Impact HAZ-3: Hazardous Conditions During Construction at Broad Beach Construction activities at Broad Beach during nourishment and backpassing events could impact the safety of public beach users.	UI	**AMM HAZ-3a: Demarcation of Public Access Routes.** Public access routes around construction areas shall be clearly marked. During replenishment operations, any pipeline extending along the beach, but outside of active replenishment areas shall be covered with sand at key access points. The sand-covered parts of the pipeline shall create 'pedestrian bridges,' at approximately 300-foot intervals, to ensure sufficient public access. **AMM HAZ-3b: Provision of Contact for Reporting Hazards.** The Applicant will provide the public with contact information in order to report immediate hazards related to the Project. This information shall be provided via public notice in a local paper and on signs at Broad Beach at least 1 week (7 days) prior to the commencement of any Project-related activities. **AMM HAZ-3c: Nightly Equipment Removal.** Construction equipment placed on the beach shall be returned to the approved staging area at the end of each workday, with the exception of equipment being actively used for deposition of dredging sand through the night. **AMM HAZ-3d: Lighting of Dredge Pipeline.** During night activities, the above-ground and floating portion of the dredge pipeline shall be lighted at 100-foot intervals as a safety precaution.
Impact HAZ-4: Potential for Dredged material Places on Broad Beach to be Contaminated Dredged material introduced in Broad Beach could impact public health and safety due to chemical content of the new material.	UI	**AMM HAZ-4a: Response to Dredged Sand Contamination.** In the event that dredge operators observe an oily sheen, toxic smell, or other indication that hazardous or dangerous materials are present in dredge spoils, dredging activities shall be relocated away from that site and a 250-yard buffer shall be established around the site. An evaluation shall be made by the appropriate authority (e.g., California Department of Fish and Game [CDFG] Office of Spill Prevention and Response) to determine the extent of the contamination and most appropriate remediation methods before dredging would be allowed to resume within the 250-yard buffer.

Table ES-1. Summary of Impacts for the Project (Continued)

Impact	Impact Class	Recommended Avoidance and Minimization Measures
		Additionally, in the event that contaminated dredged sand is inadvertently deposited within the Project area, the appropriate authority shall be contacted and shall determine the extent of the contamination and most appropriate remediation methods. The Applicant shall be required to fund the implementation of these remediation measures until the contamination within Project area has been reduced to a level determined to be safe by the appropriate authority.
Impact HAZ-5: Burial of the Emergency Revetment Burial of the emergency revetment could have short- to mid-term benefits to public health and safety.	B	No AMMs recommended.
Section 3.12 Utilities and Service Systems		
Impact UTL-1: Project Increases Protection of Seaside Broad Beach onsite wastewater treatment systems. Authorization of the emergency revetment and creation of a wide sandy beach and new dune system would protect existing leach and drain fields from damage by wave action over the mid-term, preventing potential water pollution.	B	No AMMs recommended.
Impact UTL-2: Long-term Exposure of onsite wastewater treatment systems (OWTS) to Coastal Erosion Limited nourishment events and granting permanence to substandard revetment construction would expose OWTS to damage from wave and tidal action over the long-term (e.g., 20+ years).	S	**AMM TBIO-8a: Implementation of a Comprehensive Dune Restoration Plan.** See same AMM response for Impact TBIO-8.
Impact UTL-3: Public Drain Pipes and the Existing Revetment Construction of the revetment covered existing exposed public drainage pipes.	U	No AMMs recommended.
Impact UTL-4: Dune and Beach Nourishment Could Impede Public Drainage Systems The construction of the restored dunes and beach nourishment will potentially bury or obstruct storm drains.	UI	**AMM UTL-4a: Master Drainage Plan.** The Applicant shall prepare and submit a Master Drainage Plan (MDP) to the California State Lands Commission, California Coastal Commission, and the city of Malibu for review and approval. This plan shall include measures to minimize potential for water backup in storm drains, and associated drainage/flooding concerns, as well as minimizing or avoiding damage

Table ES-1. Summary of Impacts for the Project (Continued)

Impact	Impact Class	Recommended Avoidance and Minimization Measures
		to newly created dune Environmentally Sensitive Habitat Areas (ESHAs) and beach habitats. This MDP shall address all existing and proposed modifications to public storm drains and pipes in the lease area, including those seaward of the Mean High Tide Line. It shall be prepared by a qualified Civil Engineer and be based upon data and analysis provided by a registered hydrologist. At a minimum, the MDP shall: • Identify the exact location and size of all public drains along Broad Beach and include hydrological data on the watersheds and flow characteristics of each of these drains, particularly high flood flows (e.g., 100-year event) and potential for flooding or drainage problems or erosion of dune and beach areas. • Design plans (overhead and cross-sections) for proposed modifications to public storm drains, including existing storm drains incorporated into the project design. • Identify specific drainage proposals for each storm drain and how they would affect public trust resources. • Identify measures to safely and adequately convey drainage through and across the proposed dune system and beach, including methods to avoid or minimize impacts to public trust resources and the ESHAs.
Impact UTL-5: Extension of Storm Drains may Impede Public Access Storm drains extended onto the beach from the dunes will become exposed as the beach erodes, potentially becoming unsightly and an obstacle to public lateral access.	UI	**AMM UTL-5a: Use Sectioned Pipes.** Sectioned pipe shall be used to provide for easy assembly and de-assembly based on beach erosion rates and nourishment schedules. As the beach erodes, the drainage pipes shall be de-assembled so that they do not pose an obstacle to lateral beach access. Before a nourishment event, the pipes shall be re-assembled and buried with sand. **AMM UTL-4a: Master Drainage Plan.** See same AMM response for Impact UTL-4. .
Section 3.13 Transportation, Traffic and Parking		
Impact TR-1: Construction-generated Impacts in the Vicinity of Broad Beach Traffic generated from construction activities would have a short-term, unsubstantial impact on public use of roadways to	UI	**AMM TR-1: Construction Management Plan (Zuma Beach Parking Lot Staging Area.** The Project Applicant shall provide proof that a construction management plan has been submitted for review and approval by the California State Lands Commission, Caltrans and the

Table ES-1. Summary of Impacts for the Project (Continued)

Impact	Impact Class	Recommended Avoidance and Minimization Measures
access the shoreline.		Los Angeles county Department of Beaches and Harbors. The plan shall include the following elements: • *Pacific Coast Highway (PCH)/Busch Drive Access*. Employees, fuel, and service trucks shall be required to use the PCH/Busch Drive intersection for access to the construction staging area. • *Zuma Beach Parking Lot and Access Improvements*. The Applicant shall improve the PCH/Site Access connection as necessary to make passable for trucks transporting construction equipment and materials at the beginning and end of the construction period. See Appendix I for further information. • *Restricted PCH Parking*. Parking that occurs along PCH immediately adjacent to the access connection shall be restricted as necessary on days when trucks are using the PCH access connection in order to maximize safety when trucks are transporting construction equipment and materials at the beginning and end of the construction period. • *Restricted Hours*. Trucks transporting construction equipment and materials to and from the site shall be scheduled outside of the peak commuter periods on PCH (7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM). • *Damage Repair*. The Applicant shall repair any damage to the PCH/Site Access connection or the construction staging area caused by during the construction phase of the Project. • *Notification Posts*. The Applicant shall post signage to notify beach users of construction areas and the presence and use of construction equipment. • *Safety Cordoning*. The Applicant shall cordon off construction areas where heavy equipment is being used, as necessary, to ensure safety of beach users.
Impact TR-2: Increased Parking Demand along Broad Beach Road A wider dry sandy beach at Broad Beach following renourishment may attract more users which would increase parking demand on Broad Beach Road.	U	No AMMs recommended.

Table ES-1. Summary of Impacts for the Project (Continued)

Impact	Impact Class	Recommended Avoidance and Minimization Measures
Section 3.14 Marine Vessel Safety		
Impact VS-1: Construction Impact to marine Vessel Safety in the Broad Beach Restoration Area Project construction would result in an increase in vessel traffic or a change in patterns of vessel movements that could impair the level of safety for vessels navigating in the Broad Beach Restoration Area.	UI	**AMM VS-1A: Marine Vessel Safety Plan.** At least two weeks prior to the initiation of dredging, the Applicant shall file a marine vessel operation and safety plan with the U.S. Coast Guard that details Project operations and proposed safety management techniques. This shall also include a Notice to Mariners, which provides: • The location and duration of operations; • The number and type of vessels involved in the operation; • The VHF-FM radio frequencies that will be monitored during the operation; and • At least one Point of Contact and a 24-hour phone number **AMM VS-1b: Restrict Barge Transport During Periods of Low Visibility.** Barge transits during periods of poor visibility, defined as periods when the visibility is less than the distance between the tugboat and barge, shall be avoided to the maximum extent feasible. At no time shall a transit be initiated when the visibility is less than the distance between the barge and tugboat. Should the visibility degrade during a transit, vessel speed shall be reduced to five knots or less. **AMM VS-1c: Provide Escort Boat for All Nighttime Barge Trips.** All night time barge trips shall be accompanied by an escort boat crewed by a captain and one trained observer. The escort boat will accompany the barge on all trips that occur between sunset and sunrise. **AMM VS-1d: Provide Lighting on the Barge.** Bow and stern lights shall be installed and energized during all nighttime barge transits and during periods of low visibility, defined as 0.25 nautical miles (nm) or less. **AMM VS-1e: Provide Lighting for all Floating Discharge Lines and Towlines.** All discharge lines and/or towlines shall be equipped with energized lights during nighttime operations or periods of low visibility, defined as 0.25 nm or less. **AMM VS-1f: Utilize an Observer on the Tugboats.** A deck hand shall be present on all barge transits and serve as a lookout for

Table ES-1. Summary of Impacts for the Project (Continued)

Impact	Impact Class	Recommended Avoidance and Minimization Measures
		potential interactions with other vessels.
Impact VS-2: Construction Impact to Marine Vessel Safety in Borrow Sites and Sand Transportation Routes Project construction would result in an increase in vessel traffic or a change in patterns of vessel movements that could impair the level of safety for vessels navigating in the area around the dredges or Project-related vessel routes.	U	**AMM VS-1A: Marine Vessel Safety Plan.** See same AMM response for Impact VS-1. **AMM VS-1b: Restrict Barge Transport During Periods of Low Visibility.** See same AMM response for Impact VS-1. **AMM VS-1c: Provide Escort Boat for All Nighttime Barge Trips.** See same AMM response for Impact VS-1. **AMM VS-1d: Provide Lighting on the Barge.** See same AMM response for Impact VS-1. **AMM VS-1e: Provide Lighting for all Floating Discharge Lines and Towlines.** See same AMM response for Impact VS-1. **AMM VS-1f: Utilize an Observer on the Tugboats.** See same AMM response for Impact VS-1.
Section 3.15 Environmental Justice		
Impact EJ-1: Disproportionate Adverse Impacts to Minority and/or Low-income Populations due to the Emergency Revetment The presence of the emergency revetment impacts public access, and has the potential to disproportionately affect minority and/or low-income populations.	U	No AMMs Recommended.
Impact EJ-2: Potential for Disproportionate Adverse Impacts to Minority and/or Low-income Populations due to Beach Nourishment in the Project Area Dredging and beach nourishment activities would not have impacts that could disproportionately affect minority and/or low-income populations in the Project area.	U	No AMMs Recommended.
Impact EJ-3: Disproportionate Decrease in the Employment and Economic Base of Minority and/or Low-income Populations Residing in the county and/or Immediately Surrounding Cities Dredging and beach nourishment activities would not decrease the employment or economic base of minority and/or low-	U	No AMMs Recommended.

Table ES-1. Summary of Impacts for the Project (Continued)

Impact	Impact Class	Recommended Avoidance and Minimization Measures
income populations.		
Impact EJ-4: Disproportionate Adverse Impacts to Minority and/or Low-income Populations due to Dredging in the Off-site Project Areas Dredging activities may have impacts that could disproportionately affect minority and/or low-income populations in the Off-site Project areas.	U	No AMMs Recommended.

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Table ES-2. Summary of Impacts for Project and Alternatives

Impact Class

S = Substantial impact that would remain substantial even with the application of avoidance and minimization measures (AMMs).
UI = Unsubstantial impact with implementation of AMMs.
U = Any impact that is not substantial relative to the public trust impact criteria.
B = Beneficial impact.

Alternative Key

Alt. 1 = Relocation of Properly Engineered Revetment Landward of Mean High Tide Line with Beach Nourishment and Dune Restoration
Alt. 2 = Major Landward Relocation of Properly Engineered Revetment off of Public Land and Easements with Beach Nourishment and Dune Restoration
Alt. 3 = Replacement of Revetment with Landward-located Seawall with Beach Nourishment and Dune Restoration
Alt. 4 = Reduced Project – Lower Levels of Sand Importation
Alt. 5 = Beach Nourishment and Dune Restoration with Elimination of Revetment
Alt. 6 = Landward Relocation of the Properly Engineered Revetment with Partial Removal of the Downcoast Portion of the Revetment
Alt. 7 = Alternative Beach Nourishment Sand Sources: a = Trancas Only, b = Manhattan Beach, c = Calleguas Creek

Impact	Project	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6	Alt. 7
Section 3.1 Coastal Processes								
Impact CP-1: Protection of Public Trust Resources, Septic Systems and Homes from Coastal Processes and Shoreline Erosion Beach nourishment and dune creation would provide substantial short- to mid-term benefits (10 to 20+ years) through protection of public trust resources and private property from coastal erosion.	B	More beneficial	More beneficial	More beneficial	Similar	Less beneficial	Less beneficial	a. Similar b. Similar c. Similar
Impact CP-2: Impacts of Beach Nourishment and Dune Creation of Coastal Processes Nourishment of the beach would have insignificant effects on wave height, wave direction, wave run-up, tides and currents.	U	Similar	Similar	Similar	Similar	Similar	Similar	a. Similar b. Similar c. Similar

Table ES-2. Summary of Impacts for Project and Alternatives (Continued)

Impact	Project	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6	Alt. 7
Impact CP-3: Change in Sediment Transport to Downcoast Beaches Nourishment of the beach will increase downshore sediment transport to Zuma Beach, Westward Beach, Point Dume and other downcoast beaches.	B	Similar	Similar	Similar	Less beneficial	Similar	Similar	a. Similar b. Similar c. Similar
Impact CP-4: Changes to Coastal Processes in the Broad Beach Restoration Area due to Trancas Sediment Deposit Dredging Activities Dredging the Trancas Sediment Deposit offshore borrow site could alter coastal processes in the primary study area.	U	Similar	Similar	Similar	Less adverse	Similar	Similar	a. More adverse b. Similar c. Similar
Impact CP-5: Changes to Coastal Processes at the Sediment Source Areas due to Dredging Activity Dredging the Dockweiler offshore site and Ventura Harbor sand trap could alter subsurface bathymetry, affecting breaking wave height and direction, and altering regional sand supply.	U	Similar	Similar	Similar	Less adverse	Similar	Similar	a. No impact b. Similar c. No impact
Impact CP-6: Impacts of Sea Level Rise Sea level rise would incrementally contribute to erosion of the proposed new beach over the 10 to 20 year Project life span.	U	Similar	Similar	Similar	Similar	Similar	Similar	a. Similar b. Similar c. Similar
Impact CP-7: Impact of Coastal Processes on Emergency Revetment Over the long-term, substandard construction of revetment would provide inadequate protection from coastal processes for septic systems, leachfields and homes.	S	Much less adverse	Much less adverse	Much less adverse	More adverse	Much more adverse	Less adverse	a. Similar b. Similar c. Similar
Section 3.2 Marine Water and Sediment Quality								
Impact MWSQ-1: Revetment Retention Impacts to Turbidity of Area Waters Retention of the revetment would continue armoring of the coastline and may increase turbidity in nearshore waters.	UI	Similar	Less adverse	Less adverse	Similar	Much less adverse	Less adverse	a. Similar b. Similar c. Similar

Table ES-2. Summary of Impacts for Project and Alternatives (Continued)

Impact	Project	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6	Alt. 7
Impact MWSQ-2: Beach Nourishment and Backpassing Impacts to Trancas Lagoon Beach nourishment and construction activities would occur near the mouth of Trancas Creek potentially affecting tidal exchange and the natural functioning of Trancas Lagoon.	UI	More adverse	More adverse	Much more adverse	Similar	Much more adverse	More adverse	a. Similar b. Similar c. Much more adverse
Impact MWSQ-3: Dredging and Nourishment Impacts to Marine Water and Sediment Quality Dredging and nourishment (including backpassing) would potentially increase the turbidity of Project area waters and result in the resuspension of contaminated sediment.	UI	Similar	Similar	Similar	Less adverse	Similar	Similar	a. Less adverse b. Similar c. Less adverse
Impact MWSQ-4: Impacts to Water and Sediment Quality from Potential Marine Vessel Fuel Oil Spill Water and sediment quality could be impacted by release of fuel oil from the hopper dredge or barges during Project activities following an allusion, collision or grounding.	S	Similar	Similar	Similar	Less adverse	Similar	Similar	a. Much less adverse b. Similar c. Much less adverse
Section 3.3 Marine Biological Resources								
Impact MB-1: Sand Placement Impacts to Marine Biological Resources Sand placement from Project construction and one renourishment event would result in burial and disturbance of sensitive intertidal and subtidal habitats along Broad Beach.	UI	Similar	Similar	Similar	Less adverse	Similar	Similar	a. Similar b. Similar c. Similar
Impact MB-2: Backpassing Impacts to Marine Biological Resources Annual or biannual backpassing would prolong disturbance of both rocky and sandy intertidal habitats impacting intertidal species diversity and abundance.	UI	Similar	Similar	Similar	Similar	Similar	Similar	a. Similar b. Similar c. Similar

Table ES-2. Summary of Impacts for Project and Alternatives (Continued)

Impact	Project	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6	Alt. 7
Impact MB-3: Dredging Impacts to Marine Biological Resources Dredging would result in loss of benthos, temporary increases in turbidity, and temporary displacement of demersal fish species at the sand source sites.	U	Similar	Similar	Similar	Less adverse	Similar	Similar	a. Less adverse b. Similar c. Much less adverse
Impact MB-4: Construction and Vessel Traffic Impacts to Commercial and Recreational Fishing Increased vessel traffic offshore the Project site and Off-site areas could restrict fishing in the Project area and cause losses or damage to fishing gear in the area.	U	Similar	Similar	Similar	Less adverse	Similar	Similar	a. Much less adverse b. Similar c. Much less adverse
Impact MB-5: Construction and Vessel Traffic Operations Impacts to Marine Mammals and Turtles Noise from vessel traffic and Project operations can mask reception capabilities and startle or injure marine species while entanglement or collisions with vessels can injure or kill protected species.	UI	Similar	Similar	Similar	Less adverse	Similar	Similar	a. Much less adverse b. Similar c. Much less adverse
Impact MB-6: Impacts to Marine Resources from Potential Fuel or Oil Release The increased vehicle and marine vessel traffic associated with the Project would result in an increased risk of oil or fuel release as a consequence of onshore spillage, vessel allision, collision or grounding.	UI	Similar	Similar	Similar	Less adverse	Similar	Similar	a. Much less adverse b. Similar c. Much less adverse
Section 3.4 Terrestrial Biological Resources								
Impact TBIO-1: Impacts to Terrestrial Biological Resources Resulting from the Installation of the Rock Revetment Installation of the rock revetment resulted in direct adverse impacts to dune habitat, considered an	S	More adverse	Much more adverse	Much more adverse	Similar	Less adverse	Less adverse	a. Similar b. Similar c. Similar

Table ES-2. Summary of Impacts for Project and Alternatives (Continued)

Impact	Project	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6	Alt. 7
environmentally sensitive habitat area (ESHA) under the Malibu Local Coastal Program (LCP), as well as sensitive species, such as the globose dune beetle.								
Impact TBIO-2: Short-Term Construction Impacts to Terrestrial Biological Resources Construction activities associated with beach nourishment and dune creation may adversely impact existing sandy beach and foredune habitats as well as the Trancas Creek lagoon.	UI	More adverse	More adverse	Much more adverse	Less adverse	More adverse	Much more adverse	a. Similar b. Similar c. Much more adverse
Impact TBIO-3: Long-term Construction (i.e. Backpassing) Impacts to Terrestrial Biological Resources Future beach maintenance activities, such as backpassing, may impact existing and/or created Environmentally Sensitive Habitat Areas (ESHAs) including sandy beach and foredune habitats as well as Trancas Creek Lagoon.	UI	Similar	Similar	Similar	More adverse	Similar	Similar	a. More adverse b. Similar c. Similar
Impact TBIO-4: Hazardous Spill Impacts to Beach, Coastal Dunes, and Coastal Wetland Biological Resources An accidental hazardous spill subsequent cleanup efforts would potentially result in take of special-status species, the loss or degradation of functional habitat values, or cause a substantial loss of a population or habitat of native fish, wildlife, or vegetation.	UI	More adverse	Much more adverse	Much more adverse	Similar	More adverse	Much more adverse	a. More adverse b. Similar c. Much more adverse
Impact TBIO-5: Longshore Sand Transport Impacts to Terrestrial Biological Resources Placement of sand on Broad Beach would increase longshore sand transport and likely result in the widening of Zuma Beach down coast potentially adversely altering the hydrology of the Trancas Creek Lagoon and the Zuma Wetlands environmentally sensitive habitat areas (ESHAs),	UI	Similar	Similar	Similar	Less adverse	Similar	Similar	a. More adverse b. Similar c. Similar

Table ES-2. Summary of Impacts for Project and Alternatives (Continued)

Impact	Project	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6	Alt. 7
but potentially also increasing available sandy beach and dune habitats.								
Impact TBIO-6: Impacts to Terrestrial Biological Resources Resulting From Dune Restoration and Private Access The proposed dune restoration would result in potential short- to mid-term beneficial impacts through enhancement of dune habitat values, as well as potentially increase in populations of special status wildlife or plant species.	B	Similar	Similar	Similar	Similar	Similar	Similar	a. Similar b. Similar c. Similar
Impact TBIO-7: Impacts to Terrestrial Biological Resources Resulting from Increased Public Access The proposed beach nourishment would result in increased public access to Broad Beach, which may ultimately decrease the functional value of the restored dune system or result in an increase in incidental take, including harassment, of sensitive species.	UI	Similar	Similar	Similar	More adverse	Similar	Similar	a. Similar b. Similar c. Similar
Impact TBIO-8: Long-term Degradation and Erosion of Newly Created Environmentally Sensitive Habitat Area (ESHA) Following the cessation of the Project in 10 to 20 years, newly restored dune habitat would gradually erode, eventually exposing the revetment and likely leading to a return to emergency measures for protection of property not protected by the revetment or impacted by the degradation of the revetment.	UI	Similar	Less adverse	Less adverse	Similar	Similar	Similar	a. More adverse b. Similar c. Similar
Section 3.5 Land Use, Recreation and Public Access								
Impact REC-1: Construction and Renourishment Effects to Recreation Short-term construction would interfere with recreational use and access on public lands.	UI	More adverse	Much more adverse	Much more adverse	More adverse	More adverse	More adverse	a. Similar b. Similar c. More adverse

Table ES-2. Summary of Impacts for Project and Alternatives (Continued)

Impact	Project	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6	Alt. 7
Impact REC-2: Backpassing Impacts to Recreational Users Backpassing would interfere with recreational use and access on public lands.	UI	Similar	Similar	Similar	More adverse	More adverse	Similar	a. More adverse b. Similar c. Similar
Impact REC-3: Medium- and Short-Term Effect to Recreational Use Project construction and maintenance of a widened beach and restored dune system would increase and enhance public recreation opportunities and later access.	B	Similar	Similar	Similar	Less beneficial	Similar	Similar	a. Less beneficial b. Similar c. Similar
Impact REC-4: Privacy Buffer Effects to Public Trust Lands, Public Access and Recreational Use The privacy buffer would place a substantial percentage of dry sand beach berm overlying public trust lands off limits to the public and potentially lead to renewed access conflicts at Broad Beach.	UI	No impact	No impact	No impact	No impact	No impact	No impact	a. No impact b. No impact c. No impact
Impact REC-5: Long-Term Effects to Recreational Use Exposure of the revetment through coastal erosion after cessation of beach nourishment would adversely affect recreational beach use and access by blocking public access to public trust lands and easements.	UI	Less adverse	Less adverse	No impact	More adverse	No impact	Less adverse	a. More adverse b. Similar c. Similar
Impact REC-6: Conflicts with Malibu Local Coastal Program (LCP), California Coastal Act, and Public Resources Code Policies Project impacts to ESHAs and on public access to and use of public lands would potentially conflict with the California Coastal Act and Malibu LCP policies.	S	Similar	More adverse	Much more adverse	Less adverse	More adverse	Much more adverse	a. Similar b. Similar c. More adverse
Impact REC-7: Sand Supply Effects on Regional Sand Resources Project would potentially reduce sand supply to	U	Similar	Similar	Similar	Less adverse	Similar	Similar	a. Less adverse b. Similar

Table ES-2. Summary of Impacts for Project and Alternatives (Continued)

Impact	Project	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6	Alt. 7
other beaches and/or for future nourishment project, indirectly affecting recreational opportunities on downshore Ventura and Los Angeles county beaches.								c. Less adverse
Section 3.6 Geological Hazards and Mineral Resources								
Impact GEO-1: Structural Stability of the Revetment The revetment is subject to remobilization of boulders along with settling from liquefaction events, reducing long-term protection of onsite wastewater treatment systems (OWTS) and integrity against wave action.	S	Much less adverse	Much less adverse	No impact	More adverse	No impact	Much less adverse	a. More adverse b. Similar c. Similar
Impact GEO-2: Extracted Sand Lost as a Resource to Other Beaches Extracted sand would no longer be available for extraction and nourishment projects at other beaches.	UI	Similar	Similar	Similar	Less adverse	Similar	Similar	a. Much less adverse b. Similar c. Less adverse
Section 3.7 Air Quality								
Impact AQ-1: Construction Impact on Air Quality Construction activities would generate emissions that exceed South Coast Air Quality Management District thresholds for CO, NO_x, PM_{10} and $PM_{2.5}$.	S	More adverse	Much more adverse	Much more adverse	Less adverse	More adverse	Much more adverse	a. Similar b. Similar c. Much more adverse
Impact AQ-2: Construction impact of Greenhouse Gas Emissions Potential beach enhancement activities would increase greenhouse gas emissions.	U	More adverse	Much more adverse	Much more adverse	Less adverse	More adverse	Much more adverse	a. Similar b. Similar c. Much more adverse
Impact AQ-3: Construction Toxic Pollutant Emissions and Potential Health Risk Construction activities would generate emissions of toxic air contaminants that would potentially impact	UI	More adverse	Much more adverse	Much more adverse	Less adverse	More adverse	Much more adverse	a. Similar b. Similar c. Much more

Table ES-2. Summary of Impacts for Project and Alternatives (Continued)

Impact	Project	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6	Alt. 7
human health.								adverse
Section 3.8 Aesthetics								
Impact AES-1: Visual Effects from the Presence of the Emergency Revetment The emergency revetment impacts the visual quality of Broad Beach.	UI	Similar	Less adverse	Similar	More adverse	No impact	Less adverse	a. More adverse b. Similar c. Similar
Impact AES-2: Short-Term Visual Effects from Beach Restoration Construction Activities at Broad Beach Construction activities would create temporary negative visual impacts during dune restoration, nourishment events, and backpassing events.	UI	More adverse	Much more adverse	Much more adverse	Less adverse	More adverse	Much more adverse	a. Similar b. Similar c. Much more adverse
Impact AES-3: Visual Effects from the Nourishment of Broad Beach Nourishment of Broad Beach would improve the visual quality of Broad Beach over the short- to mid-term.	B	Similar	Similar	Similar	Less beneficial	Similar	Similar	a. Less beneficial b. Similar c. Similar
Impact AES-4: Visual Effects from Dredging Activities Offshore Dockweiler and Outside Ventura Harbor Dredging activities could create temporary negative visual impacts associated with large marine vessels operating in nearshore waters.	U	Similar	Similar	Similar	Less adverse	Similar	Similar	a. No impact b. Similar c. No impact
Impact AES-5: Potential Indirect Visual Impacts to Los Angeles and Ventura Beaches due to Decreased Sand Supply Removal of sand from the Santa Monica Bay and Ventura Littoral Cells could deprive downcoast beaches of sand for renourishment projects.	U	Similar	Similar	Similar	Less adverse	Similar	Similar	a. Similar b. Similar c. Similar
Section 3.9 Noise								
Impact N-1: Construction Impact to Recreational Users of Broad Beach Short-term noise levels would increase during	UI	More adverse	More adverse	Much more adverse	Similar	More adverse	More adverse	a. Similar b. Similar

Table ES-2. Summary of Impacts for Project and Alternatives (Continued)

Impact	Project	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6	Alt. 7
Project construction potentially affecting a public beach.								c. More adverse
Impact N-2: Construction Impacts to Offshore Recreational Users in the Vicinity of the Borrow Sites and Sand Transportation Routes Short-term noise levels would increase during Project construction potentially affecting recreational users in public trust waters.	U	Similar	Similar	Similar	Less adverse	Similar	Similar	a. No impact b. Similar c. No impact
Impact N-3: Construction Impacts to Onshore Recreational Users at Ventura Harbor and Dockweiler State Beach Short-term noise levels would increase during dredging activities potentially affecting beach users on Dockweiler State Beach and/or Ventura Harbor.	U	Similar	Similar	Similar	Similar	Similar	Similar	a. No impact b. Similar c. No impact
Section 3.10 Cultural and Paleontological Resources								
Impact CR-1: Disturbance of a Cultural or Paleontological Resource due to Construction of the Emergency Revetment Construction of the emergency revetment may have disturbed cultural or paleontological resources or their surroundings on Broad Beach.	U	More adverse	More adverse	More adverse	Less adverse	More adverse	More adverse	a. Similar b. Similar c. Similar
Impact CR-2: Disturbance of a Cultural or Paleontological Resource or its Surroundings due to Dredging and/or Beach Nourishment Dredging and/or beach nourishment activities may disturb cultural or paleontological resources or their surroundings in the Broad Beach Restoration Area and/or borrow sites.	UI	Similar	Similar	Similar	Less adverse	Similar	Similar	a. Less adverse b. Similar c. Less adverse
Section 3.11 Public Health and Safety, Hazards								
Impact HAZ-1: Authorization of the Revetment Creates Hazards Authorization of the emergency revetment could impact public health and safety by trapping beach	UI	Less adverse	Much less adverse	Much less adverse	More adverse	Much less adverse	Much less adverse	a. More adverse b. Similar c. Similar

Table ES-2. Summary of Impacts for Project and Alternatives (Continued)

Impact	Project	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6	Alt. 7
users between large rocks and incoming surf and tides.								
Impact HAZ-2: Hazardous Materials Release During Construction Hazardous material released from construction equipment on the beach during two nourishment events and backpassing could impact public safety.	UI	More adverse	Much more adverse	Much more adverse	More adverse	Much more adverse	Much more adverse	a. Similar b. Similar c. Much more adverse
Impact HAZ-3: Hazardous Conditions During Construction at Broad Beach Construction activities at Broad Beach during nourishment and backpassing events could impact the safety of public beach users.	UI	Much more adverse	Much more adverse	Much more adverse	More adverse	Much more adverse	Much more adverse	a. Similar b. Similar c. Much more adverse
Impact HAZ-4: Potential for Dredged Material Placed on Broad Beach to be Contaminated Dredged material introduced to Broad Beach could impact public health and safety due to chemical content of the new material.	UI	Similar	Similar	Similar	Less adverse	Similar	Similar	a. Less adverse b. Similar c. Similar
Impact HAZ-5: Burial of the Emergency Revetment Burial of the emergency revetment could have short- to mid-term benefits to public health and safety.	B	Similar	Much more beneficial	Much more beneficial	Less beneficial	Much more beneficial	Much more beneficial	a. Less beneficial b. Similar c. Similar
Section 3.12 Utilities and Service Systems								
Impact UTL-1: Project Increases Protection of Seaside Broad Beach onsite wastewater treatment systems Authorization of the emergency revetment and creation of a wide sandy beach and new dune system would protect existing leach and drain fields from damage by wave action over the mid-term, preventing potential water pollution.	B	More beneficial	Much more beneficial	Much more beneficial	Less beneficial	Much less beneficial	Similar	a. Less beneficial b. Similar c. Similar
Impact UTL-2: Long-term Exposure of onsite wastewater treatment systems (OWTS) to Coastal Erosion	S	Less adverse	Much less adverse	Much less adverse	Much less adverse	Much more adverse	Similar	a. More adverse b. Similar

Table ES-2. Summary of Impacts for Project and Alternatives (Continued)

Impact	Project	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6	Alt. 7
Limited nourishment events and granting permanence to substandard revetment construction would expose OWTS to damage from wave and tidal action over the long-term (e.g. 20+ years).								c. Similar
Impact UTL-3: Public Drain Pipes and the Existing Revetment Construction of the revetment covered existing exposed public drainage pipes.	U	Similar	Similar	Less adverse	Similar	Less adverse	Less adverse	a. Similar b. Similar c. Similar
Impact UTL-4: Dune and Beach Nourishment Could Impede Public Drainage Systems The construction of the restored dunes and beach nourishment will potentially bury or obstruct storm drains.	UI	Similar	Similar	Similar	Less adverse	Similar	Similar	a. Similar b. Similar c. Similar
Impact UTL-5: Extension of Storm Drains may Impede Public Access Storm drains extended onto the beach from the dunes will become exposed as the beach erodes, potentially becoming unsightly and an obstacle to public lateral access.	UI	Similar	Similar	Similar	More adverse	Similar	Similar	a. More adverse b. Similar c. Similar
Section 3.13 Transportation, Traffic and Parking								
Impact TR-1: Construction-generated Impacts in the Vicinity of Broad Beach Traffic generated from construction activities would have a short-term, unsubstantial impact on public use of roadways to access the shoreline.	UI	More adverse	Much more adverse	Much more adverse	Similar	Much more adverse	Much more adverse	a. Similar b. Similar c. Much more adverse
Impact TR-2: Increased Parking Demand along Broad Beach Road A wider dry sandy beach at Broad Beach following renourishment may attract more users which would increase parking demand on Broad Beach Road.	U	Similar	Similar	Similar	Similar	Similar	Similar	a. Similar b. Similar c. Similar
Section 3.14 Marine Vessel Safety								
Impact VS-1: Construction Impact to Marine Vessel Safety in the Broad Beach Restoration Area	UI	Similar	Similar	Similar	Less adverse	Similar	Similar	a. Much more

Table ES-2. Summary of Impacts for Project and Alternatives (Continued)

Impact	Project	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6	Alt. 7
Project construction would result in an increase in vessel traffic or a change in patterns of vessel movements that could impair the level of safety for vessels navigating in the Broad Beach Restoration Area.								adverse b. Similar c. Much less adverse
Impact VS-2: Construction Impact to Marine Vessel Safety in Borrow Sites and Sand Transportation Routes Project construction would result in an increase in vessel traffic or a change in patterns of vessel movements that could impair the level of safety for vessels navigating in the area around the dredges or Project-related vessel routes.	UI	Similar	Similar	Similar	Less adverse	Similar	Similar	a. Much less adverse b. Similar c. Much less adverse
Section 3.15 Environmental Justice								
Impact EJ-1: Disproportionate Adverse Impacts to Minority and/or Low-income Populations due to the Emergency Revetment The presence of the emergency revetment impacts public access, and has the potential to disproportionately affect minority and/or low-income populations.	U	Similar	Less adverse	Less adverse	Similar	No impact	Less adverse	a. Similar b. Similar c. Similar
Impact EJ-2: Potential for Disproportionate Adverse Impacts to Minority and/or Low-income Populations due to Beach Nourishment in the Project Area Dredging and beach nourishment activities would not have impacts that could disproportionately affect minority and/or low-income populations in the Project area.	U	Similar	Similar	Similar	Similar	Similar	Similar	a. Similar b. Similar c. Similar
Impact EJ-3: Disproportionate Decrease in the Employment and Economic Base of Minority and/or Low-income Populations Residing in the county and/or Immediately Surrounding Cities Dredging and beach nourishment activities would	U	Similar	Similar	Similar	Similar	Similar	Similar	a. Similar b. Similar c. Similar

Table ES-2. Summary of Impacts for Project and Alternatives (Continued)

Impact	Project	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6	Alt. 7
not decrease the employment or economic base of minority and/or low-income populations.								
Impact EJ-4: Disproportionate Adverse Impacts to Minority and/or Low-income Populations due to Dredging in the Off-site Project Areas Dredging activities may have impacts that could disproportionately affect minority and/or low-income populations in the Off-site Project areas.	U	Similar	Similar	Similar	Similar	Similar	Similar	a. Less adverse b. Similar c. More adverse